

Happy Friday the 13th!

Today I have review 4 important articles. The first deals with long term symptoms of people who have recovered from COVID infection. This is another article highlighting there may be long term aftereffects. The second article looks at age on personal and social response to the pandemic. The next article looks at SARS-CoV-2 transmission in marine recruits. This article brings up the effectiveness of screening. The last article as promised looks at cross-protective immunity with recent infections with other coronaviruses.

Next week I will have some Thanksgiving recommendations and revisit the issue of lockdowns in a commentary for you to respond.

Be safe and have a good weekend as many areas in the US are seeing a significant increase in COVID cases.

Ed

Persistent Fatigue Following SARS-CoV-2 Infection is Common and Independent of Severity of Initial Infection

PlosOne published online November 9, 2020

doi.org/10.1371/journal.pone.0240784

This study involved taking blood samples from and administering the Chalder Fatigue Scale (CFQ-11) assessment to 128 patients visiting an outpatient post-coronavirus care clinic. CFQ-11 rates fatigue on a scale of 9 to 63 based on a nine-item questionnaire, with a higher score indicating more fatigue.

Sixty-seven of 128 participants (52.3%) reported fatigue, a common symptom of acute COVID-19 infection, a median of 10 weeks after recovery, while 54 (42.2%) said they had recovered their full health. According to the CFQ-11 case definition, 67 of 128 participants (52.3%) met the criteria for fatigue, with a mean score of 20. While participants' physical and psychological fatigue levels after COVID-19 were higher than those of the general population, they were lower than scores indicating "chronic fatigue syndrome", a complex illness causing extreme fatigue for at least 6 months unrelated to any underlying disease.

Before their illness, 105 participants (82%) had worked outside the home, but 33 (31%) of them still had not returned to employment by the time of study participation. There was no link between persistent fatigue and the need for hospitalization, supplemental oxygen, or critical care or concentrations of laboratory biomarkers of inflammation or cell turnover. However, women and those previously diagnosed as having depression or anxiety or reporting use of antidepressant drugs made up a disproportionate number of those with lingering fatigue. Of the 128 patients, 66 (51.6%) were HCWs, but there was no association between occupation and lasting fatigue.

Comment: This article confirms articles reviewed in the last month in the Daily Briefing. The high proportion of HCWs infected by COVID-19, not just in this cohort but across the globe, means that this will have a significant impact on healthcare systems. The absence of a specific immune signature associated with persistent fatigue is a significant finding. This is a single center study in a predominantly white Irish population which may limited the generalizability to other populations. The study is cross-sectional in nature, but only assessed participants at a single timepoint.

How Does Age Affect Personal and Social Reactions to COVID-19: Results from the National Understanding America Study

PlosOne published online November 10, 2020

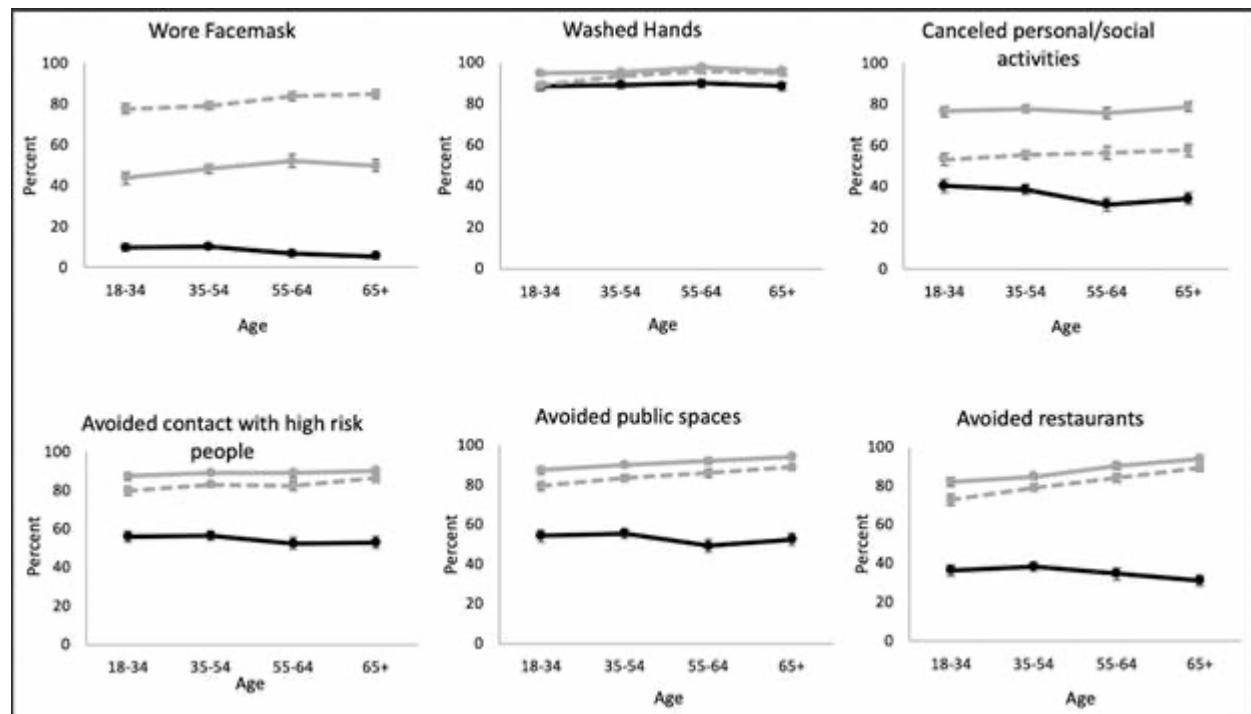
doi.org/10.1371/journal.pone.0241950

Investigators analyzed survey data from 5,128 US adults during four "waves" of the pandemic from Mar 10 to May 26, using nationally representative responses from the Understanding Coronavirus in America Tracking Survey. Respondents reported their participation in the past 7 days in six preventive personal activities—mask wearing, avoiding crowds, etc.—and four risky social behaviors—non-household member contacts, eating in restaurants, etc.

At the beginning of the pandemic, people of all ages reported a similar likelihood of engaging in preventive personal behaviors, but people 65 and older quickly adopted preventive behaviors during wave 2—Apr 1 to Apr 28. Older participants showed the most change in preventive behaviors from March to May, perhaps because of an awareness of their increased disease risk.

By wave 4—from Apr 29 to May 26—people 65 and older were significantly less likely to engage in risky activities, reporting a 38.7% rate of contacts with non-household members, versus 54.0% for those aged 18 to 34. As the pandemic progressed, all age-groups showed a decrease in preventive practices, with older people maintaining higher rates of adherence than younger individuals. [Covid fatigue?]

Greater adoption of pandemic-mitigating behaviors was seen for women, racial/ethnic minorities, and those with higher socioeconomic status. [very interesting finding] Higher state case rates, a greater perceived risk of infection and dying, and a more left-leaning political orientation were also associated with increased adoption of preventive behaviors.



Wave 1 (03/10/20-03/31/20), wave 2 (04/01/20-04/28/20) and wave 4 (04/29/20-05/26/20).

Comment: It is encouraging to observe older people taking more preventive personal behaviors as the pandemic progressed but at the same time, it is concerning that people started loosening observance of recommendations to avoid risky behaviors, particularly older people who could have greater risk from meeting with family and friends. This finding is disconcerting especially with the holidays upon us.

SARS-CoV-2 Transmission among Marine Recruits during Quarantine

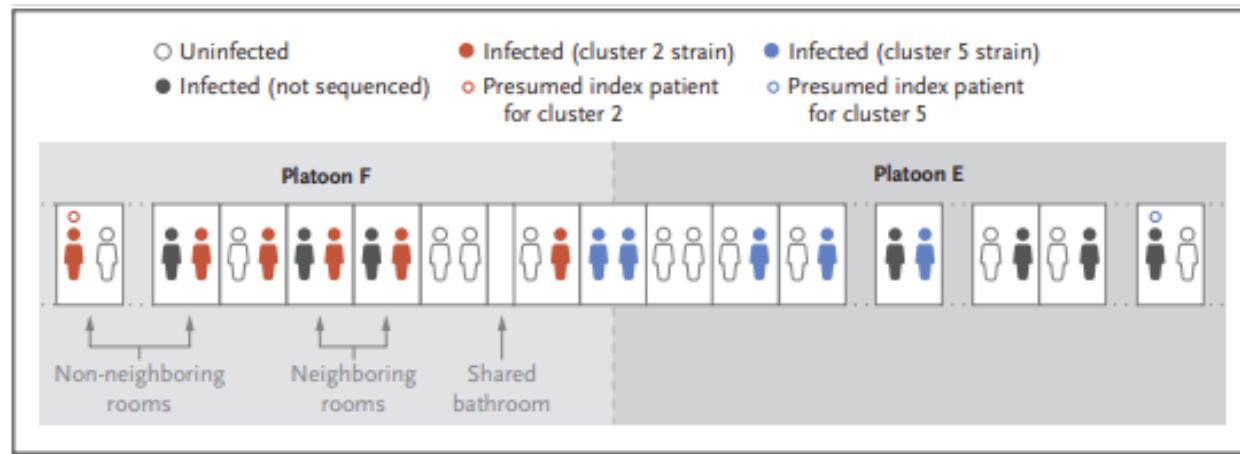
N Engl J Med published online November 11, 2020

DOI: 10.1056/NEJMoa2029717

This study investigated SARS-CoV-2 infections among U.S. Marine Corps recruits who underwent a 2-week quarantine at home followed by a second supervised 2-week quarantine at a closed college campus that involved mask wearing, social distancing, and daily temperature and symptom monitoring. Recruits were tested for SARS-CoV-2 by nasal PCR obtained between the time of arrival and the second day of supervised quarantine and on days 7 and 14. They performed phylogenetic analysis of viral genomes obtained from infected study volunteers to identify clusters and to assess the epidemiologic features of infections.

A total of 1848 recruits volunteered to participate in the study; within 2 days after arrival on campus, 16 (0.9%) tested positive for SARS-CoV-2, 15 of whom were asymptomatic. An additional 35 participants (1.9%) tested positive on day 7 or on day 14. Only five of the 51 participants (9.8%) who tested positive at any time had symptoms in the week before a positive PCR test.

Analysis of 36 SARS-CoV-2 genomes obtained from 32 participants revealed six transmission clusters among 18 participants. Epidemiologic analysis supported multiple local transmission events, including transmission between roommates and among recruits within the same platoon.



Comment: Most recruits who tested positive were asymptomatic, and no infections were detected through daily symptom monitoring. Not surprisingly, shared rooms and shared platoon membership were risk factors for transmission. This study has implications for colleges, healthcare facilities, prisons, meatpacking plants and other places that rely on screening to detect infections to prevent transmission and outbreaks. Symptom screening and temperature checks used in healthcare and other venues may be inadequate alone for detecting most SARS-CoV-2 infections. Since it takes a lot of time and effort putting these screening processes in place and maintaining them, the question now, is it worth continuing these processes? Do the results in this study apply to all ages? Perhaps routine testing may be a better strategy in younger adults who often have no symptoms.

Preexisting and De Novo Humoral Immunity to SARS-CoV-2 in Humans

Science published online November 6, 2020

DOI: 10.1126/science.abe1107

The investigators set out to determine the degree of cross-reactivity between HCoVs and SARS-CoV-2. They developed a flow cytometry-based assay for SARS-CoV-2-binding antibodies. The main target for such antibodies is the spike glycoprotein (S), which is proteolytically processed into the S1 and S2 subunits, mediating target cell attachment and entry, respectively.

Using these assays, they were able to detect preexisting humoral immunity against SARS-CoV-2. Specifically, SARS-CoV-2 glycoprotein (S)-reactive antibodies were detected by the flow cytometry they developed in uninfected persons and were fairly common in children primarily IgG and targeted S2 subunit. In contrast, SARS-CoV-2 infection induced high titers of SARS-CoV-2 reactive IgG antibodies, targeting both S1 and S2 subunits, and concomitant IgM and IgA antibodies. SARS-CoV-2 uninfected sera demonstrated specific neutralizing activity against SARS-CoV-2 and SARS-CoV-2 S pseudotypes.

Comment: The results from multiple independent assays demonstrated the presence of preexisting antibodies recognizing SARS-CoV-2 in uninfected individuals. Identification of conserved epitopes in S2 targeted by neutralizing antibodies may hold promise for a universal vaccine protecting against current, as well as future CoVs. Together with preexisting T cell and B cell memory, antibody cross-reactivity between seasonal HCoVs and SARS-CoV-2 may have important ramifications for natural infection. Epidemiological studies of HCoV transmission suggest that cross-protective immunity is unlikely to be long-lasting, which is also supported by repeated reinfection. But while adults might get one or two colds a year, children get many more. As a result, children develop coronavirus antibodies that may result in cross immunity to SARS-CoV-2 and may explain why young children have lower SARS-CoV-2 infections. [suggested by other publications review in the Daily Briefing over the last few months]